

AMENDMENTS TO THE CLAIMS

1-32. (Cancelled)

33. (Currently Amended) A light emitting diode (LED), comprising:
a first gallium nitride layer having a first conductivity;
a super lattice structure including InGaN on the first gallium nitride layer,
wherein the super lattice structure includes a plurality of first InGaN layers and a
plurality of second InGaN layers,
wherein each of the plurality of first InGaN layers has an In composition different from
an In composition of each of the plurality of second InGaN layers, and
wherein one of the plurality of first InGaN layers or one of the plurality of second
InGaN layers is directly on the first gallium nitride layer;
an active layer on the super lattice structure including InGaN; and
a second gallium nitride layer having a second conductivity on the active layer,
wherein the super lattice structure including InGaN has a plurality of pits formed
thereon, and
wherein a non-zero number of the plurality of pits is 50 or less per area of 5 $\mu\text{m} \times 5\mu\text{m}$.

34. (Previously Presented) The LED according to claim 33, wherein the active layer
comprises an InGaN/InGaN structure of a multi-quantum well structure.

35-36. (Cancelled)

37. (Previously Presented) The LED according to claim 33, wherein the super lattice structure including InGaN includes an $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{In}_y\text{Ga}_{1-y}\text{N}$ multi-layer.

38. (Currently Amended) The LED according to claim 33, wherein each layer of the super lattice structure including InGaN has a thickness of 1~3000 Å.

39. (Previously Presented) The LED according to claim 33, wherein the super lattice structure including InGaN has a photoluminescence characteristic of a yellow band intensity/N-doped GaN intensity ratio of 0.4 or below.

40. (Previously Presented) The LED according to claim 33, wherein the active layer is directly on the super lattice structure including InGaN.

41. (Previously Presented) The LED according to claim 33, wherein the LED is blue LED.

42. (Currently Amended) A method for manufacturing a light emitting device, the method comprising the steps of:

forming a buffer layer;

forming an N-type gallium nitride layer on the buffer layer;

forming a super lattice structure including InGaN on the N-type gallium nitride layer,

wherein the super lattice structure including InGaN includes a plurality of first InGaN layers and a plurality of second InGaN layers.

wherein each of the plurality of first InGaN layers has an In composition different from an In composition of each of the plurality of second InGaN layers, and

wherein one of the plurality of first InGaN layers or one of the plurality of second InGaN layers is directly on the N-type gallium nitride layer;

forming an active layer on the super lattice structure including InGaN; and

forming a P-type gallium nitride layer on the active layer,

wherein the active layer is grown at a temperature lower than the first and second temperatures;

wherein the super lattice structure including InGaN has a plurality of pits formed thereon and wherein a non-zero number of the plurality of pits is 50 or less per area of $5\mu\text{m} \times 5\mu\text{m}$, and

wherein the buffer layer is grown at a first temperature,

wherein the first InGaN layer of the super lattice structure including InGaN is grown at a second temperature higher than the first temperature,

wherein the second InGaN layer of the super lattice structure including InGaN is grown at a third temperature higher than the first temperature and lower than the second temperature, and

wherein the active layer is grown at a fourth temperature of 600–800°C higher than the first temperature and lower than the second and third temperatures.

wherein the buffer layer is grown at a first temperature, and the super lattice structure is grown at a second and a third temperature higher than the first temperature, and the active layer is grown at a fourth temperature higher than the first temperature and lower than the second and third temperature.

43. (Cancelled)

44. (Previously Presented) The method according to claim 42, wherein the active layer comprises an InGaN/InGaN structure of a multi-quantum well structure.

45-46. (Cancelled)

47. (Previously Presented) The method according to claim 42, wherein the super lattice structure including InGaN includes an $In_xGa_{1-x}N/In_yGa_{1-y}N$ multi-layer.

48. (Previously Presented) The method according to claim 42, wherein each layer of the super lattice structure including InGaN has a thickness of 1~3000 Å.

49. (Previously Presented) The method according to claim 42, wherein the super lattice structure including InGaN has a photoluminescence characteristic of a yellow band intensity/N-doped GaN intensity ratio of 0.4 or below.

50. (Previously Presented) The method according to claim 42, wherein the active layer is directly formed on the super lattice structure including InGaN.

51. (Currently Amended) A light emitting diode (LED), comprising:

a substrate;

a buffer layer on the substrate;

an undoped GaN layer on the buffer layer;

an N-type GaN layer directly on the undoped GaN layer;

a super lattice structure including InGaN directly on the N-type GaN layer,
wherein the super lattice structure including InGaN includes a plurality of first layers
and a plurality of second layers,

wherein each of the first layers has a thickness of 1~3000 Å,

wherein each of the second layers has a thickness of 1~3000 Å, and

wherein one of the plurality of first layers or one of the plurality of second layers is
directly on the N-type GaN layer;

an active layer on the super lattice structure including InGaN; and

a P-type GaN layer on the active layer,

wherein the super lattice structure including InGaN has a plurality of pits thereon and

wherein a non-zero number of the plurality of pits is 50 or less per area of $5\mu\text{m} \times 5\mu\text{m}$.

52. (Previously Presented) The LED according to claim 51, further comprising:

a GaN layer between the buffer layer and the undoped GaN layer.

53. (Previously Presented) The LED according to claim 52, wherein the undoped GaN layer is directly on the GaN layer.

54. (Previously Presented) The LED according to claim 51, wherein the active layer comprises:

an InGaN/InGaN structure of a multi-quantum well structure.

55. (Previously Presented) The method according to claim 42, further comprising:
forming an undoped GaN layer on the buffer layer before forming the N-type gallium
nitride layer.

56. (Previously Presented) The method according to claim 55, wherein the undoped GaN
layer is grown at a fifth temperature higher than the first temperature, the second temperature,
the third temperature and the fourth temperature.

57. (Previously Presented) The method according to claim 42, further comprising:
forming a plurality of pits between the active layer and the P-type gallium nitride layer.